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## PLUMAGE CHANGES IN THE RED-SHOULDERED WRENS (*Malurus*)

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Wherever settlement has brought them into contact with man the lovely little birds of the Fairy Wren group (*Malurus*) have become a source of attraction. A peculiar upright carriage of the tail, the brilliant livery of the mature male and a marked predominance of birds in sombre greys and browns, are characteristics that have fascinated many serious bird-watchers and captured the imaginations of laymen.

The habits of Fairy Wrens have been described in popular writings from time to time with a good deal of sentimentalism. The brilliantly coloured male, so often seen among a company of grey and brown birds, has been variously described as "polygamist" and "mormon." Comparatively recent writings by bird observers who have given a good deal of time to watching wrens continuously and critically throughout the year have shown that plumage development in relation to age and moults may explain why coloured males are in minority.

In eastern Australia where the Superb Blue Wren (*Malurus cyaneus*) is often to be found resident throughout the year in suburban gardens, bird students have discovered interesting facts about the plumage changes among males. A. H. Chisholm (*Fairy Wrens*, 1948, p. 36) writes: "After each nesting season Blue-cap reverts to a plain brown, until, when he is three or four years old, the bright colours return after each moult and the blue and black becomes practically permanent." This explanation, which is supported by other bird-watchers, gives a logical account of the minority of coloured males during the non-breeding period. Does it apply to other species of *Malurus*?

Since arriving in the Morawa district in February 1948, I have listed Fairy Wrens of three groups, the Splendid Wren (*Malurus splendens*), the Blue-and-white Wren (*M. leuco-notus*) and birds of the red-shouldered group (Figs. 1 and 2). The latter may be of two species, *M. lamberti* and *M. pulcherrimus*, and are certainly either one or the other. The nests of all three groups have been found in the district.

During 1949, I was able to select a number of accessible communities of the local red-shouldered wrens, and visit them periodically for the purpose of noting possible plumage changes.

Results indicated that among the birds watched there was a double moult each year; that the males lost their bright colours and were distinguishable from the females only by darker bills and the absence of coloured lores.

On October 8, 1948, males in full plumage were noted in three communities at Merkanooka. They were still in full plumage in December when I left for the Christmas vacation. On February 10, 1949, after returning, I found the males in two of these communities were partly moulted into "eclipse plumage." These two males still showed traces of the moult on March 3.

A thorough search was made of the same two groups at Merkanooka, and another two groups at Morawa on April 21 and no coloured or partly coloured males could be found.

Three groups consisting of eleven birds were watched at Merkanooka on April 30 for the purpose of endeavouring to locate a male showing the characteristic colours, or traces of the colours in its plumage. No birds in this phase were seen. At Morawa on May 6 a similar search of two groups, each consisting of three birds, yielded similar results. At close quarters it was possible to isolate one individual from its companions by the distinctive black bill, absence of coloured lores, somewhat lighter whitish-grey throats and deeper blue tails.

I did not record any further plumage changes until July 1 when a single male at Merkanooka was seen with coloured feathers appearing. On July 24, after several months of comparative silence, wrens at Merkanooka were calling strongly and a male was seen with blackish feathers showing on the breast, light blue cheeks, and some chestnut on the shoulders. On September 4 fully coloured males were seen in two Merkanooka areas and a few days later the first fully coloured male of the season at Morawa was recorded.

Thus the observations indicated that a moult occurred in February and March. After April 21 no coloured birds were seen until July when a second moult brought males back into colour again. By September several males had the characteristic spring plumage.

Further observations extending into the year 1950 support the previous data. On February 18 one of the Merkanooka males was showing grey plumage replacing blue on the crown. Its very worn tail feathers also indicated an approaching moult. On March 13 another male had only traces of colour showing.

Considering the observations of Eastern States writers relating to the permanence of full coloration of male *M. cyaneus* after the third or fourth season and the seasonal moult into eclipse plumage before that age, it would be rash to conclude that the red-shouldered *Malurus* of the Morawa district all follow the pattern indicated by these observations. It is possible that none of the birds watched by the writer had reached the age of four years.

It is of interest to note that Mr. H. O. Webster (*The Emu*, vol. 47, p. 290) considers that the males of *M. clegans*, another mem-

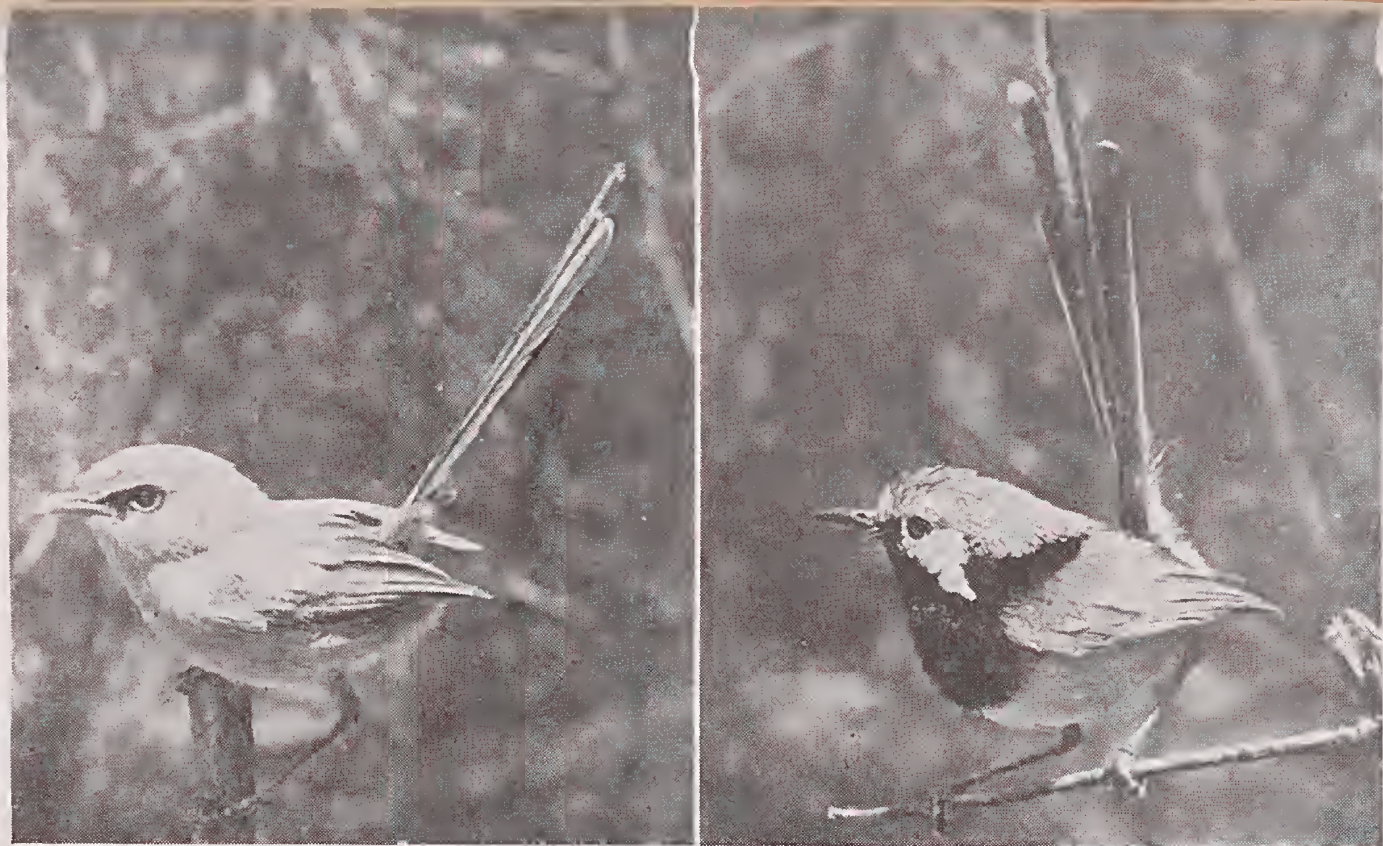


Fig. 1.—Female (left) and male (right) of red-shouldered Wren at Coorow.

ber of the red-shouldered *Malurus* group found in the South-west of this state, "assume adult plumage in the first twelve months of life, and do not breed in that twelve months."

Yet another species, the Blue-and-white Wren (*M. leuconotus*), appears to follow quite a different pattern in its plumage phases. It is well known to field observers who have experience of this species that males may breed in the plain brown and grey plumage; indeed there is reason to believe that some males may never attain the dazzling blue-and-white satin garb of full maturity (*Western Australian Naturalist*, vol. 1, 1949, p. 164).

The coloured male Splendid Wren (*M. splendens*), perhaps to the layman the best known of all Western Australian *Malurus*, like other members of the genus is usually observed among a group of grey and brown companions. Here again, perhaps age and seasonal moults may be accountable. Have males of this species been known to breed in immature plumage? Do all males in colour retain their blue garb throughout the year or do they moult out?

My own observations on this species have never been sufficiently sustained in the one area to cover all months, but during March and April of 1946 I could not find a blue bird among three communities watched in gullies and on hillsides adjacent to the Collic River. With the aid of binoculars I was able to detect blue feathers appearing beneath the dull tail coverts of a sun-basking bird. The latter could of course have been a young male about to undergo his first colour change.

Most bird-watchers who have attempted to draw conclusions concerning the colour phases of male wrens and to explain the comparative preponderance of drably garbed birds have been doubtless faced with confusing evidence in the form of a bevy of fully coloured males. Mr. K. Buller recounts having observed a group of four coloured *M. splendens*. In January 1950 I was surprised to find a similar number of males among a group of six birds in samphire near the Vasse estuary. These birds were escorting three young which had just left the nest, and at one time three fully coloured males were all in attendance with insect larvae. A somewhat similar occurrence was witnessed among the sand-dunes near City Beach in August 1949, when I was in the company of D. L. Serventy and V. N. Serventy. On that occasion three fully coloured males of the Blue-and-white wren (*M. leuconotus*) were seen with a small party of that species.

It seems probable from the facts that have been established by bird observers that age and moults may be important factors in accounting for the minority of coloured males of the genus *Malurus*. When one searches for published data, however, there is evident a striking lack of substantial knowledge. There is a vast field for the bird student who has not the time or the facilities to embark upon ambitious projects. Those club members who could watch their local wren flocks critically throughout the year for plumage changes should be able to contribute very valuable data.



Fig. 2.—Female red-shouldered Wren at nest with young.

—Photos S. R. White.